## (19) World Intellectual Property Organization

International Bureau



## 

(43) International Publication Date 27 January 2005 (27.01.2005)

PCT

(10) International Publication Number WO 2005/008813 A1

(51) International Patent Classification<sup>7</sup>:

H01M 4/90

(21) International Application Number:

PCT/KR2003/001407

(22) International Filing Date:

16 July 2003 (16.07.2003)

(25) Filing Language:

Korean

(26) Publication Language:

**English** 

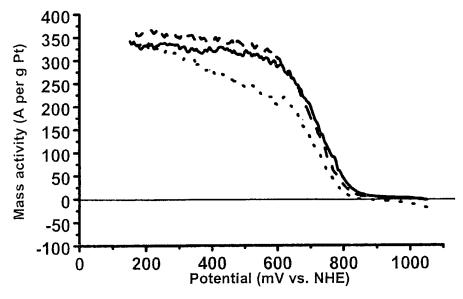
- (71) Applicants (for all designated States except US): KYUNGWON ENTERPRISE CO., LTD. [KR/KR]; 17th Floor, Korean Intellectual Property Center Bldg., 647-9 Yeoksam-dong, Gangnam-gu, 135-980 Scoul (KR). KOREA ADVANCED INSTITUTE OF SCIENCE AND TECHNOLOGY [KR/KR]; 373-1 Guseong-dong, Yuseong-gu, 305-701 Dacjeon (KR).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): KIM, Hee Jung [KR/KR]; 7-305 Asia Seonsuchon Apt., 86 Chamsil-dong, Songpa-gu, 138-220 Seoul (KR). WOO, Seong Ihl [KR/KR]; 219-601 Family Apt., Munjeong-dong, Songpa-gu, 138-200 Seoul (KR).

- (74) Agent: HWANG, Eui In; 10th Floor, Hankook Tire Bldg., 647-15 Yeoksam-dong, Gangnam-gu, Seoul 135-723 (KR).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: NANO-STRUCTURED METAL-CARBON COMPOSITE FOR ELECTRODE CATALYST OF FUEL CELL AND PROCESS FOR PREPARATION THEREOF



(57) Abstract: The present invention relates to a nano-structured metal-carbon composite and applications thereof, and more specifically, to a nano-structured metal-carbon composite obtained by consecutively impregnating a transition metal precursor and a carbon precursor in a nano frame and reacting the precursors at high temperature. In the metal-carbon composite of the present invention, metal is orderly polydispersed with less than 1 nanometer within a mesoporous carbon, and metal is chemically combined with carbon. Therefore, the metal-carbon composite is useful for electrocatalyst of fuel cells.